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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/334,387	06/16/1999	TAKASHI DATE	9281/3347	5276

757 7590 07/01/2003

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CHICAGO, IL 60611

EXAMINER

QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/334,387

Applicant(s)

DATE ET AL.

Examiner

Mike Qi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,893,625 (Tamatani et al) in view of US 4,832,467 (Miyagi et al).

Claims 1-5, Tamatani discloses (Figs. 5-6) that a liquid crystal display device

Comprising:

- first substrate (1a) on which display electrodes (17) (the electrodes must be made of conductive material such as metal and is reflective) is formed;
- second substrate (1b) arranged opposite to the first substrate (1a);
- a sealing material (10), interposed between the pair of substrate (1a, 1b), for surrounding, together with the substrates;
- a liquid crystal injection space formed between the substrates; and liquid crystal deposited into and sealed into the liquid crystal injection space through the injection hole (3); the liquid crystal injection hole (liquid crystal injection portion) is formed in the sealing material (10);
- a plurality of display electrode (16a,16b,..., 17a,17b,...) are formed on a substrate surface adjacent to the liquid crystal (the liquid crystal is deposited into the liquid crystal injection space).

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Tamatani does not expressly disclose that a metal reflective film is formed on a substrate surface, and the metal reflective film is spaced apart from the display electrodes, and the metal reflective film is not formed on a portion of the substrate surface adjacent to the injection portion in the sealing material, and the portion of the substrate where the metal reflective film has not been formed providing an inspection area for the visual inspection of the injection portion in the sealing material as claimed in claims 1 and 4, or the metal reflective film is formed on a portion of a substrate surface adjacent to the display electrode region, but is not formed on a portion of a substrate adjacent to the drawn electrode region, and the portion of the substrate where the metal reflection film has not been formed providing an inspection area for the visual inspection of the drawn electrode region as claimed in claims 2 and 5, or the metal reflective film is not formed in a region of a substrate in which the second drawn electrode and the display electrode of the other substrate are connected to each other on the sealing material, and the region of the first substrate where the metal reflective film is not formed providing an inspection area for the visual inspection of the connection between the second drawn electrode and the display electrode as claimed in claim 3.

arrangement of metal film

However, Miyagi discloses (col.4, lines 10-37; Fig.1) that a liquid crystal mirror in which a metal reflective film (26) (such as AL or Cr) is coated on the outside surface of the back substrate (20), and alternatively, the reflective film (26) may be formed on the inside surface of the substrate (20) to underlie the electrode film (22) (must be display electrode), and that would be metal reflective film being spaced apart from the display electrode formed on a surface of a substrate. It was common and known in the art the

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reflective film would increase the light reflectance and enhance the brightness of the display. In order to enhance the brightness of the display, the reflective film must be formed adjacent to the display region and not to be formed in the non-display region such as the sealing region or in the adjacent region to the liquid crystal injecting portion, so as to distinguish the brightness between the display region and the non-display region. Because the metal reflection film has not been formed in a portion of the substrate, so that the portion where the metal reflection film has not been formed must be transparent. Therefore, the portion that has not metal reflection film would be an inspection area for the visual inspection and that is a function limitation (that does not given weight for the claims as an intended use), because the transparent portion must have the visual inspection function to inspect the injection portion in the sealing material or to inspect the drawn electrode region or to inspect the connection between the second drawn electrode and the display electrode.

Therefore, concerning claims 1 and 4, it would have been obvious to those skilled in the art at the time the invention was made to form a metal reflective film on a substrate surface as claimed in claims 1 and 4 for enhancing the brightness of the display and distinguishing the display region and the non-display region.

Therefore, concerning claims 2 and 5, the drawn electrodes of the display electrodes must be the electrodes terminals. Tamatani discloses (Figs. 5-6) that the electrodes terminals are formed at the edges of the substrates and outside the display electrodes forming region. Such that it would have been obvious to those skilled in the art at the time the invention was made to form the metal reflective film on a portion of a

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substrate surface adjacent to the display electrode region, but is not formed on the portion of a substrate adjacent to the drawn electrode region (outside the display region) as claimed in claims 2 and 5 for enhancing the brightness of the display and distinguishing the display region and the non-display region.

Therefore, concerning claim 3, the first drawn electrode for a display electrode on the one of the substrates must be the pixel electrode terminal on the lower substrate; the second drawn electrode for a display electrode on the other substrate must be the common electrode terminal on the upper substrate. Tamatani discloses (Figs. 5-6) that the display electrodes terminals are formed at the edge of one of the substrates. Because the electrodes terminals are formed at the edge of the substrate would increase the display area. The second drawn electrode and the display electrode of the other substrate must be the common electrode terminal and the common electrode on the upper substrate. The common electrode terminal and the common electrode must be connected to each other by an electrode connection means. The electrode connection means must be electrical conductive material such as conductive particles; conductive epoxy within the boundary, which seals the liquid crystal, i.e., the electrical conductive means is arranged on the sealing means so as to increase the display area. Such that it would have been obvious to those skilled in the art at the time the invention was made to arrange the metal reflective film is not formed on a region of a substrate in which the second drawn electrode and the display electrode of the other substrate are connected to each other on the sealing material (i.e., non-display region) as claimed in

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claim 3 for enhancing the brightness of the display and distinguishing the display region and the non-display region.

The limitations in the claims 4 and 5 are redundant. Because the limitations claimed in the claims 4 and 5 were included in the claims 1 and 2.

Claim 6, the electrode connection means consists of conductive particles added to the region constituting the sealing material was common and known in the art. Because the electrode must connect to the electrode terminal, and the connection means must be electrical conductive material such as the sealing material consists of conductive particles. The electrode connection means arranged on the sealing material would increase the display area, and that would have been at least obvious.

Response to Arguments

3. Applicant's arguments filed on Mar.25, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) The references Tamatani and Miyagi do not disclose a reflective metal film disposed on the surface of the device substrate and the reflective metal surface has not been formed on a specific portion of the substrate, and forming visual inspection areas.

Examiner's responses to Applicant's **only** arguments are as follows:

1) The reference Miyagi discloses (col.4, lines 10-37; Fig.1) that a liquid crystal mirror in which a metal reflective film (26) (such as AL or Cr) is coated on the outside surface of the back substrate (20), and alternatively, the reflective film (26) may be

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formed on the inside surface of the substrate (20) to underlie the electrode film (22) (must be display electrode), and that would be metal reflective film being spaced apart from the display electrode formed on a surface of a substrate. It was common and known in the art the reflective film would increase the light reflectance and enhance the brightness of the display. In order to enhance the brightness of the display, the reflective film must be formed adjacent to the display region and not to be formed in the non-display region such as the sealing region or in the adjacent region to the liquid crystal injecting portion (i.e., the metal reflection film being formed in a specific portion of a substrate), so as to distinguish the brightness between the display region and the non-display region. Because the metal reflection film has not been formed in a portion of the substrate, so that the portion where the metal reflection film has not been formed must be transparent. Therefore, the portion that has not metal reflection film would be an inspection area for the visual inspection, and that is a function limitation (that does not given weight for the claims as intended use), because the transparent portion must have the visual inspection function to inspect the injection portion in the sealing material or to inspect the drawn electrode region or to inspect the connection between the second drawn electrode and the display electrode.

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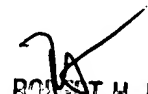
Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
June 6, 2003


ROBERT H. KIM
SUPERVISOR, PATENT EXAMINER
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